ZooKeys 146: 1–17 (2011)
doi: 10.3897/zookeys.146.1856
www.zookeys.org

RESEARCH ARTICLE

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Redescription of the rare amphipod crustacean *Pseudaeginella montoucheti* (Quitete, 1971) from Brazil

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Academic editor: *A. Myers* | Received 27 July 2011 | Accepted 27 October 2011 | Published 9 November 2011

Citation: Lacerda MB, Takeuchi I, Masunari S (2011) Redescription of the rare amphipod crustacean *Pseudaeginella montoucheti* (Quitete, 1971) from Brazil. ZooKeys 146: 1–17. doi: 10.3897/zookeys.146.1856

Abstract

Pseudaeginella montoucheti (Quitete, 1971) is redescribed based on newly collected specimens from red and brown algae and tubiculous polychaete colony that were obtained from shallow waters at Tamboretes Archipelago, Balneário Barra do Sul and Sepultura Beach, Bombinhas, Santa Catarina State, Brazil. Of 10 species of *Pseudaeginella* so far reported, *P. montoucheti* is closest to *P. sanctipauli* Laubitz, 1995, but differs from the latter by having more numerous body spines including ventro-lateral ones over gills on pereonites 3 and 4, and the antenna 1 length measuring half body length. An identification key for *Pseudaeginella* species and a checklist of Caprellidea occurring along the Brazilian coasts are also presented.

Keywords

Amphipoda, *Pseudaeginella montoucheti* (Quitete, 1971), Redescription, Santa Catarina, Brazil

Introduction

The knowledge on ecology and biology of Brazilian caprellids is restricted to some areas and substrata, mainly those living on macroalgae from southeastern and southern coast (Masunari 1982; Dutra 1988; Arenzon and Bond-Buckup 1991; Wakabara et al. 1991; Dubiaski-Silva and Masunari 1995; Mittmann and Müller 1998; Jacobucci et al. 2002; Jacobucci et al. 2006; Leite et al. 2007; Dubiaski-Silva and Masunari 2008). In the same way, taxonomic studies about Brazilian caprellids are also limited to few descriptions of new species (McCain 1968; Quitete 1971a, b, 1972; Serejo 1998; Guerra-García 2003a; Rayol and Serejo 2003) and two redescriptions (Serejo 1997; Masunari and Takeuchi 2006).

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Of 19 species of caprellids so far recorded from Brazilian coasts (Table 1), *Pseudaeginella montoucheti* was firstly described as *Fallotritella montoucheti* Quitete, 1971 (Quitete 1971a), based on specimens collected from Pernambuco State, northeastern Brazil. In the middle of 1990's, Laubitz (1995) synonymed the genus *Fallotritella* with the genus *Pseudaeginella*, leading to change subsequently into *Pseudaeginella montoucheti* (Quitete, 1971). The present study redescribes *Pseudaeginella montoucheti* based on individuals from Santa Catarina State, southern Brazil with the special reference to characteristics of mouthpart and appendages. Additionally, a key for the species of the genus *Pseudaeginella* and a checklist of Caprellidea occurring along the Brazilian coasts are also presented.

Materials and methods

Collections were conducted at two Islands - Pássaros Island (26°22'S, 48°31'W) and Araras Island (26°27'S, 48°34'W) – in Tamboretes Archipelago, municipality of Balneário Barra do Sul (16th May 2009) and at Sepultura Beach, Bombinhas (30th June 2011) Santa Catarina State, southern Brazil. Caprellideans were found in the phytal of the red algae *Amphiroa beauvoisii* Lamouroux and *Spyridia aculeata* (Schimper) Kützing, of the brown alga *Sargassum cymosum* C. Agardh, 1820 and as the associate fauna of a tubiculous polychaete colony; these communities were living over rocky surface in infralittoral depths, from 0.5 to 7.0 m. The biological substrates were carefully wrapped up in a plastic bag and scraped from the rocky surface with a spatula by scuba divers. In laboratory, the plastic bag content was very kindly washed in dilute formalin. The deposited material was sieved, sorted and caprellids were fixed and preserved in ethyl alcohol 70%.

From a total of 54 examined specimens (31 males and 23 females), several specimens of male and female were selected to be dissected under stereomicroscope. The dissected material was mounted in polyvinyl lactophenol. All figures were drawn with the aid of a *camera lucida*. Specimens are deposited in Museum of Natural History of Capão da Imbuia (MHNCI) and in Center for Zoological Studies (CEZ), from Institute of Biology, Federal University of Rio de Janeiro.

Results

Family Caprellidae Leach, 1814
Genus *Pseudaeginella* Mayer, 1890

***Pseudaeginella montoucheti* (Quitete, 1971)**
http://species-id.net/wiki/Pseudaeginella_montoucheti
Figs 1–4

Fallotritella montoucheti: Quitete 1971a, p.189–192, figs. 1–2
Pseudaeginella montoucheti – Laubitz, 1995, p.88.

Material examined. MHNCI 2844 One female from the phytal of red alga *Spyridia aculeata*, 7 m deep, Araras Island (26°27'S, 48°34'W), Tamboretes Archipelago, Santa Catarina, Brazil, 16th May, 2009.

MHNCI 2845 One male and two females from the phytal of the calcareous red alga *Amphiroa beauvoisii*, 4 m deep.

MHNCI 2846 Three males and two females from the phytal of *Amphiroa beauvoisii*, 1.5 m deep, Pássaros Island (26°22'S, 48°31'W), Tamboretes Archipelago, Santa Catarina, Brazil, 16th May, 2009.

MHNCI 2847 Four males and two females from the phytal of brown alga *Sargassum cymosum*, Bombinhas (27°08'28"S, 48°28'42"W), Santa Catarina, Brazil, 30th June, 2011.

CEZ 968 Holotype male from of *Sargassum,* Itamaracá, Pernambuco, Brazil 5th August, 1968. Collector: Dr. Pierre Montouchet.

CEZ 971 Two paratypes males and three paratypes females from of *Sargassum*, Mar Grande, Bahia, Brazil, 22th January, 1968. Collector: Dr. Pierre Montouchet.

CEZ 972 12 paratypes males and eight paratypes females from of *Sargassum*, Itamaracá, Pernambuco, Brazil 5th August, 1968. Collector: Dr. Pierre Montouchet.

CEZ 973 Seven paratypes males and four paratypes females from of *Sargassum*, Mar Grande, Bahia, Brazil, 22th January, 1968. Collector: Dr. Pierre Montouchet.

CEZ 974 One paratype male and one paratype female from of *Sargassum*, Guarapari, Espírito Santo, Brazil, 6th September, 1968. Collector: Dr. Pierre Montouchet.

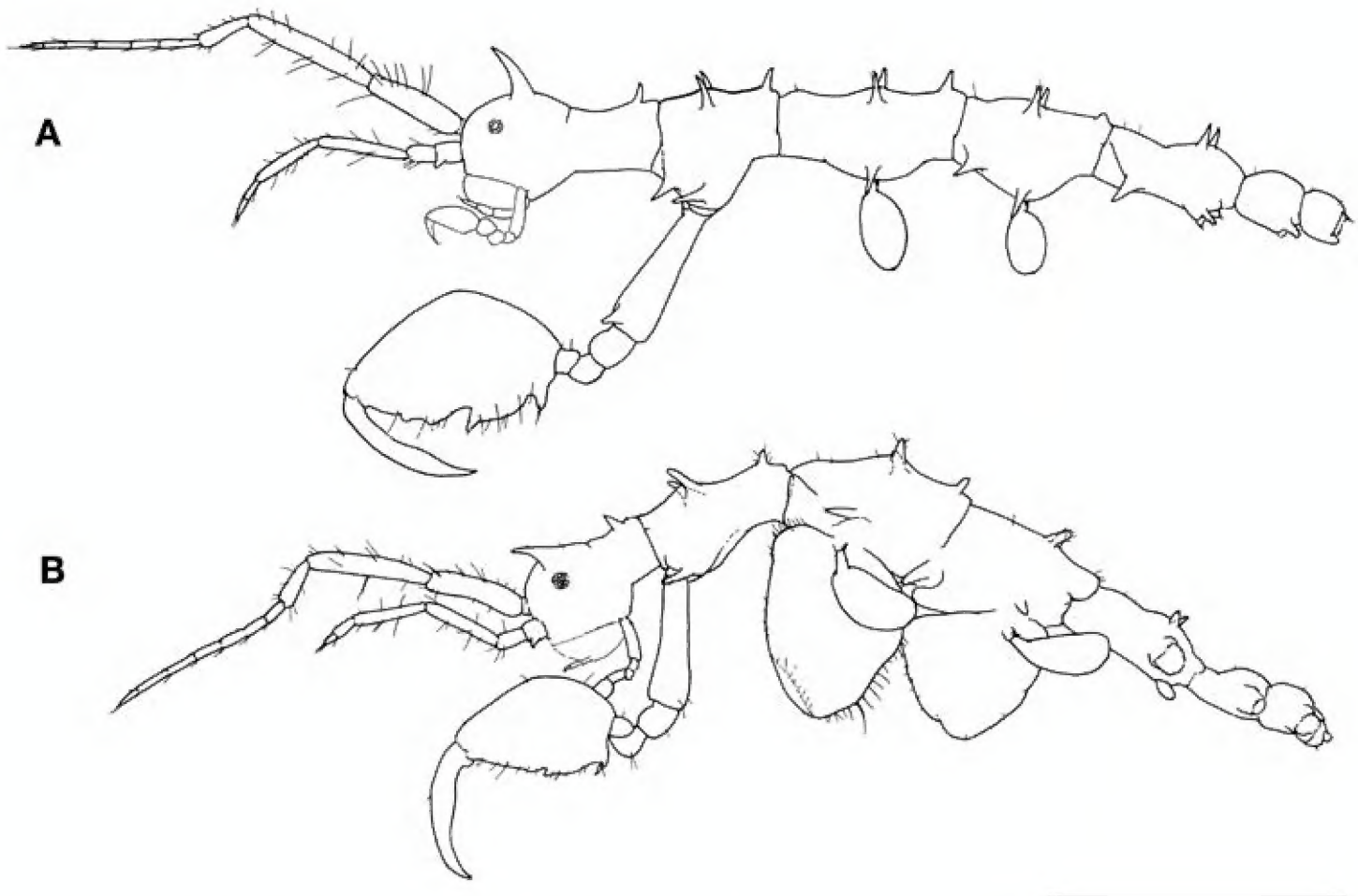

Figure 1. *Pseudaeginella montoucheti* (Quitete, 1971). **A** male, lateral view **B** female, lateral view. Scale bar: 1.0 mm.

Table 1. Checklist of the Brazilian Caprellidae with their distribution in Brazil

Species	Distribution in Brazil (references)
Caprellidae ***Caprella* Lamarck, 1801**	
Caprella aculeata (Dana, 1853)	Rio de Janeiro (Wakabara and Serejo 1998)
Caprella andreae Mayer, 1890	Torres and Tramandaí, RS (Arenzon and Bond-Buckup 1991)
Caprella danilevskii Czerniavski, 1868	Ubatuba, SP (Jacobucci et al. 2002; Cunha et al. 2008), Paranaguá, PR (Dutra 1988), Matinhos, PR (Dubiaski and Masunari 1995), Bombinhas, SC (Dubiaski-Silva and Masunari 2008)
Caprella dilatata Krøyer, 1843	Arraial do Cabo, RJ (Serejo 1998), Ubatuba, SP (Jacobucci et al. 2002), Santos, SP (Jacobi 1987), Peruíbe, SP (Jacobucci et al. 2006), Penha, SC (Masunari and Takeuchi 2006)
Caprella equilibra Say, 1818	Ubatuba, SP (Jacobucci et al. 2002; Cunha et al. 2008), São Sebastião, SP (Flynn and Valério-Berardo 2009), Peruíbe, SP (Jacobucci et al. 2006), Bombinhas, SC (Dubiaski-Silva and Masunari 2008)
Caprella globiceps Dana, 1853	Rio de Janeiro (Wakabara and Serejo 1998)
Caprella penantis Leach, 1814	Paranaguá, PR (Dutra 1988), Matinhos, PR (Dubiaski and Masunari 1995), Bombinhas, SC (Dubiaski-Silva and Masunari 2008), Governador Celso Ramos, SC (Mittmann and Müller 1998)
Caprella scaura Templeton, 1836	Arraial do Cabo, RJ (Serejo 1998), Ubatuba, SP (Jacobucci et al. 2002; Leite et al. 2007; Cunha et al. 2008), São Sebastião, SP (Flynn and Valério-Berardo 2009), Peruíbe, SP (Jacobucci et al. 2006), Bombinhas, SC (Dubiaski-Silva and Masunari 2008)
***Hemiaegina* Mayer, 1890**	
Hemiaegina minuta Mayer, 1890 *(= Hemiaegina costai* Quitete, 1972*)*	Bahia and Pernambuco States (Quitete 1972; Serejo 1997)
***Liropus* Mayer, 1890**	
Liropus nelsonae Guerra-García, 2003	7°58'S, 34°17'W – 7°50'S, 34°17'W (Guerra-García 2003a)
***Monoliropus* Mayer, 1903**	
Monoliropus enodis Rayol & Serejo, 2003	Guanabara Bay, RJ (Rayol and Serejo 2003)
***Orthoprotella* Mayer, 1903**	
Orthoprotella melloi Quitete, 1975	Pernambuco State (Quitete 1975)
***Paracaprella* Mayer, 1890**	
Paracaprella digitimanus Quitete, 1971	1°21'S, 43°50'W (Quitete 1971b)
Paracaprella pusilla Mayer, 1890	Arraial do Cabo, RJ (Serejo 1998), Ubatuba, SP (Leite et al. 2007), São Sebastião, SP (Flynn and Valério-Berardo 2009)
Paracaprella tenuis Mayer, 1903	Ubatuba SP (Cunha et al. 2008), Bombinhas, SC (Dubiaski-Silva and Masunari 2008)
***Parvipalpus* Mayer, 1890**	

Species	**Distribution in Brazil (references)**
Parvipalpus colemani Guerra-García, 2003	7°58'S, 34°17'W – 7°50'S, 34°17'W (Guerra-García 2003a)
***Pseudaeginella* Mayer, 1890** *Pseudaeginella montoucheti* (Quitete, 1971)	Itamaracá, PE, Mar Grande and Olivença, BA, Guarapari and Vitória, ES (Quitete 1971a), Arraial do Cabo, RJ (Serejo 1998), Ubatuba, SP (Jacobucci et al. 2002; Cunha et al. 2008), Pássaros Island (26°22'S, 48°31'W) and Araras Island (26°27'S, 48°34'W), Balneário Barra do Sul, SC (present study)
Phtisicidae ***Phtisica* Slabber, 1769**	
Phtisica marina Slabber, 1769	Arraial do Cabo, RJ (Serejo 1998), Peruíbe, SP (Jacobucci et al. 2006)
Phtisica verae Quitete, 1979	Rio de Janeiro State (Quitete 1979)

BA, Bahia State; ES, Espírito Santo State; PE, Pernambuco State; RJ, Rio de Janeiro State; SC, Santa Catarina State; SP, São Paulo State

Male (Fig. 1A). Body length 3.0 mm. Pereonites 3 and 4 the longest, followed by pereonites 2 and 5. Head and pereonite 1 (suture clearly present) concave along dorsal margin, head with an anteriorly curved mid-dorsal projection, pereonite 1 with a small postero-dorsal projection. Pereonite 2 with paired mid-dorsal projections, 1 postero-dorsal projection, paired antero-lateral projections and paired mid-lateral projections. Pereonite 3 with paired mid-dorsal projections, 1 postero-dorsal projection and paired mid-lateral projections. Pereonite 4 with paired mid-dorsal projections, 1 weak postero-dorsal projection, paired antero-lateral projections and paired mid-lateral projections. Pereonite 5 with paired mid-dorsal projections, paired antero-lateral projections and paired mid-lateral projection near the swollen basal part of pereopod 5. Pereonite 6 with paired postero-lateral projections near the basal part of pereopod 6.

Antennae (Figs. 2A, 2B). Antenna 1 about half body length. Peduncular articles with ca. 10 to 20 simple setae of varied length; peduncular article 2 the longest followed by article 1. Flagellum 6-articulate with 4/5 of peduncular length. Antenna 2 about 4/5 of antenna 1 length, without swimming setae; peduncular setose in varied length; flagellum with 8 and 6 simple setae in the proximal and distal articles.

Mouthparts (Figs. 3A–G). Upper lip notched, forming rounded projections. Right mandible with incisor with 5 teeth and followed by lacinia mobilis with 5 teeth and 3 trapezoid plates; palp article 2 with 1 lateral seta; palp article 3 setal formula 1–6–1 with a distal knob. Left mandible incisor with 5 teeth followed by 3 trapezoid plates; palp article 2 with 1 lateral seta; palp article 3 setal formula 1–6–1 with a distal knob. Lower inner lips round and fused each other, outer lobes round with 1 apical seta. Maxilla 1 outer plate with 6 stout apical setal-teeth; palp distal margin with 4 setae. Maxilla 2 inner plate triangular with 4 apical setae; outer plate elongate with about 4 apical setae. Maxilliped basal endite (inner plate) with 2 setae on outer margin; ischial endite (outer plate) oval, 2 times longer than inner plate, with 4 or 5 setae on inner

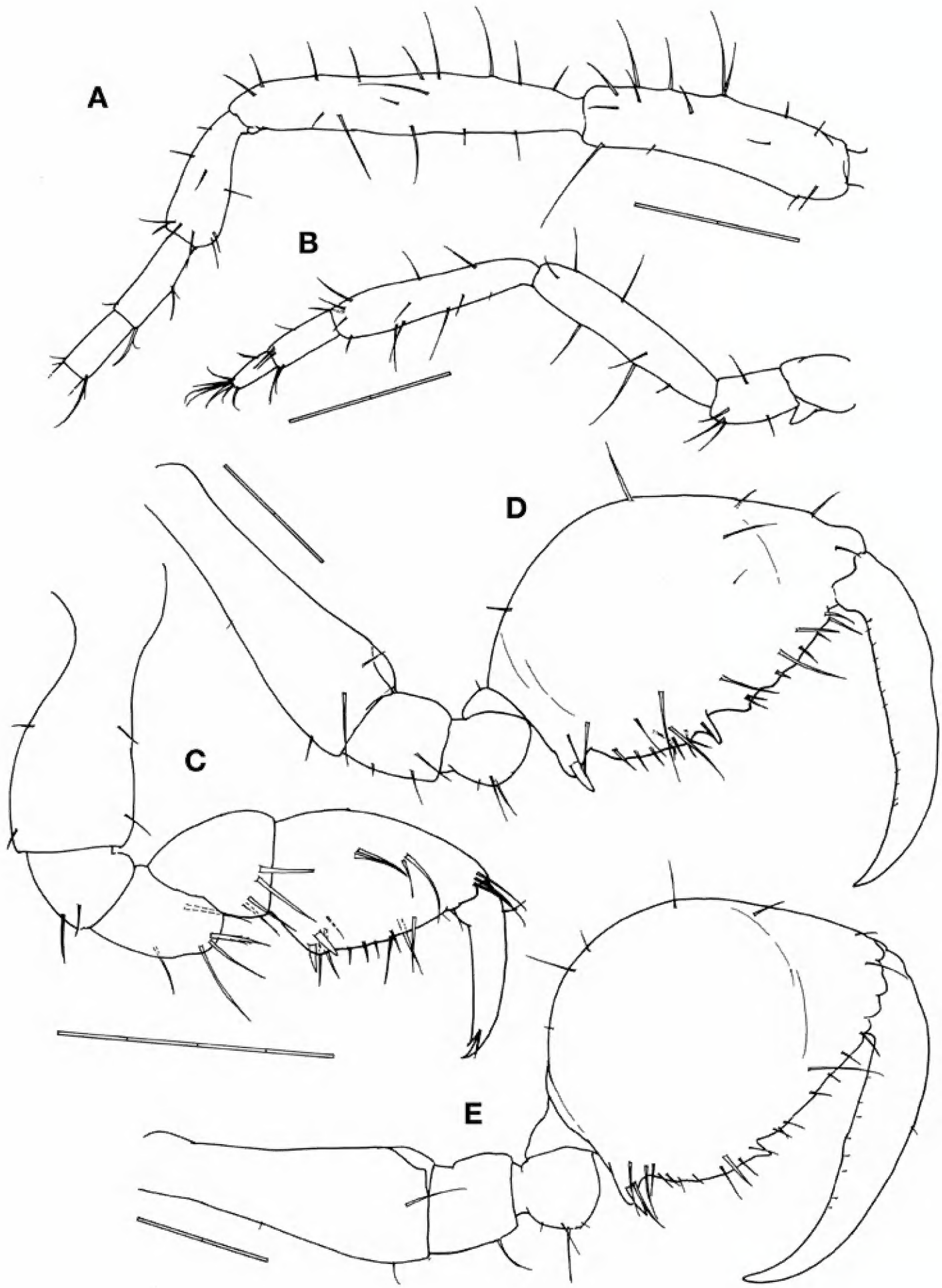

Figure 2. *Pseudaeginella montoucheti* (Quitete, 1971). **A–D** male. **A** antenna 1 **B** antenna 2 **C** gnathopod 1 **D** gnathopod 2. **E** female gnathopod 2. Scale bars: **A–E:** 0.2 mm.

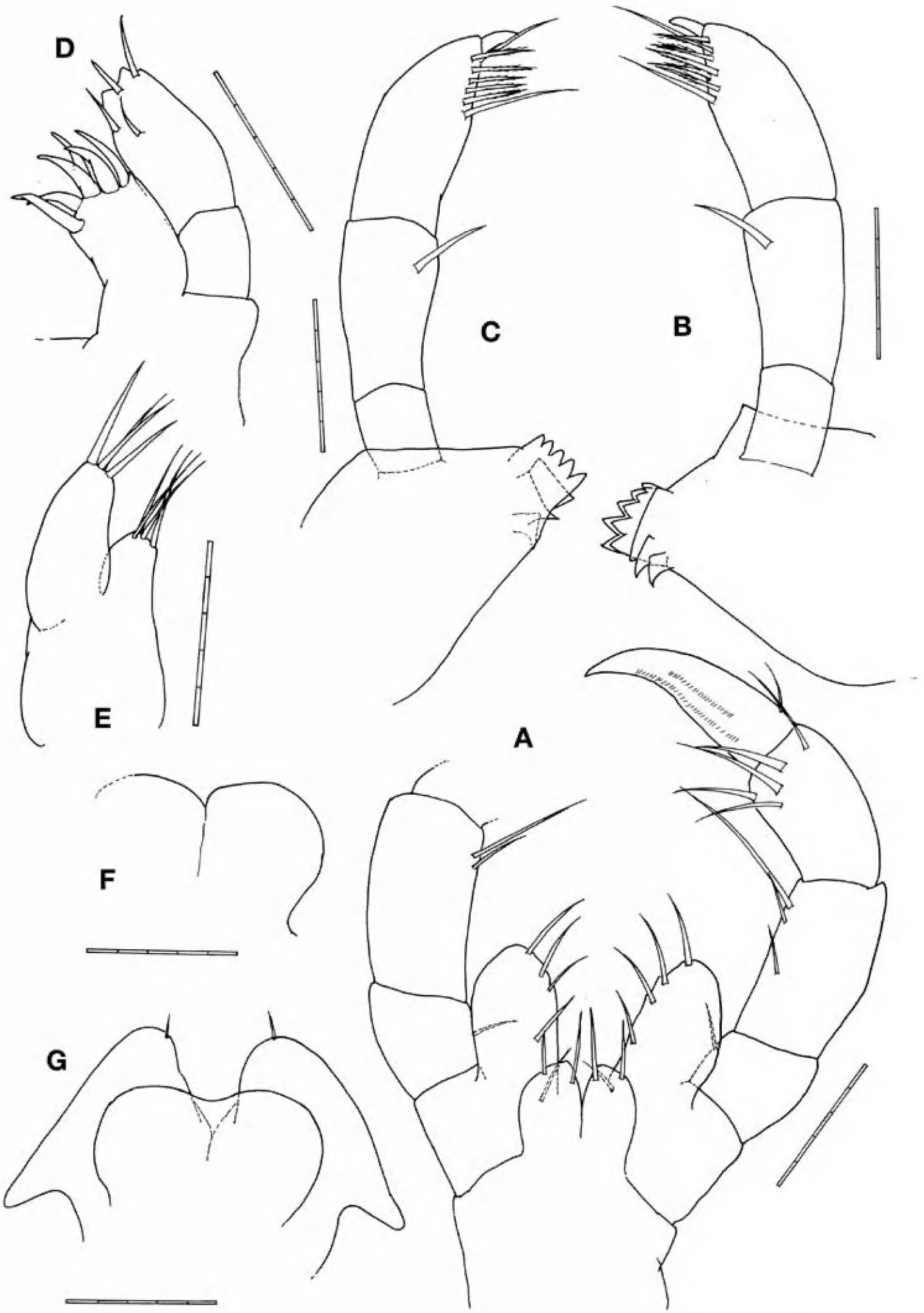

Figure 3. *Pseudaeginella montoucheti* (Quitete, 1971). Male. **A** maxilliped **B** left mandible **C** right mandible **D** maxilla 1 **E** maxilla 2 **F** upper lip **G** lower lip. Scale bars: **A–G:** 0.05 mm.

margin; palp article 2 with 2 or 3 setae on inner margin; palp article 3 with 5 distal setae; palp article 4 (dactylus) weakly falcate.

Gnathopod 1 basis as long as ischium, merus and carpus combined, covered by sparse setae of varied length; propodus subtriangular, palm with a pair of proximal stout setae (grasping spines) and a row of 8 simple setae; dactylus with sparse and short setae, inner margin smooth with a teeth subdistally (Fig. 2C).

Gnathopod 2 inserted in the pereonite 2 at 2/5 from anterior margin (Fig. 1A); coxa vestigial; basis 1.3 times of pereonite 2 length, with a spiny projection near antero-distal corner; ischium rectangular; merus rounded; carpus triangular and provided with scarce simple setae; propodus oval, ratio between width: length = 0.57, inner margin provided with 1 stout setae proximally, 3 triangular projections medially and distally and numerous setae: few simple setae on the outer margin; dactylus shorter than palm and slightly curved with a row of setulae alongside the inner margin (Fig. 2D).

Gill 3 length 2/5 of corresponding pereonite, elliptical (Fig. 1A), pereopod 3 tiny with 2 simple setae apically (Fig. 4A). Gill 4 length 1/3 of corresponding pereonite, elliptical (Fig. 1A), pereopod 4 similar to pereopod 3 (Fig. 4B).

Pereopod 5 basis to carpus furnished with 3–10 setae of varied length; palm of propodus very slightly concave with 2 setae proximally and a row of 7 robust setae alongside; dactylus slightly curved (Fig. 4C). Pereopods 6 and 7 similar to pereopod 5 in feature but increasing in size (Figs. 4D, 4E).

Penes length about 2 times width (Fig. 4F).

Abdomen with a pair of lateral lobes and dorsal lobe with a pair of dorsal setae (Fig. 4F).

Female. Body length 3.1 mm (Fig. 1B). Pereonites 3 and 4 subequal and the longest, followed by pereonite 2. Clear suture between head and pereonite 1, head with 1 anteriorly curved mid-dorsal projection. Antenna 1 flagellum 7-articulate. Pereonite 1 with 1 postero-dorsal projection. Pereonite 2 with paired mid-dorsal projections, 1 postero-dorsal projection and paired antero-lateral projections. Pereonite 3 with paired mid-dorsal projections, 1 postero-dorsal projection, paired mid-lateral projections and paired postero-lateral projections. Pereonite 4 with paired mid-dorsal projections and paired mid-lateral projections. Pereonite 5 with paired mid-dorsal projections. Gnathopod 2 propodus length 1.5 times width (Fig. 2E), with grasping spine proximally followed by a serrated margin; two smooth triangular projections medially.

Intraspecific variation. In adult males and females including those collected by Quitete (Quitete, 1971a) in Pernambuco State, the number of articles in the flagellum of antenna 1 varies from 5 to 7 during growth. The size reduction of the mid-dorsal projections on pereonites 3 and 5 mentioned by this author was only found among specimens studied by her. Setal formula for terminal article of mandibular palp can be 1–5-1 or 1–6-1. The body spination is rather constant among individuals summing up 30 spines in males.

Type locality. Itamaracá, Pernambuco State, Brazil.

Distribution. Western South Atlantic. Brazil. Itamaracá, Pernambuco State; Olivença, Ilhéus, Bahia State; Vitória and Guarapari, Espírito Santo State (Quitete 1971a).

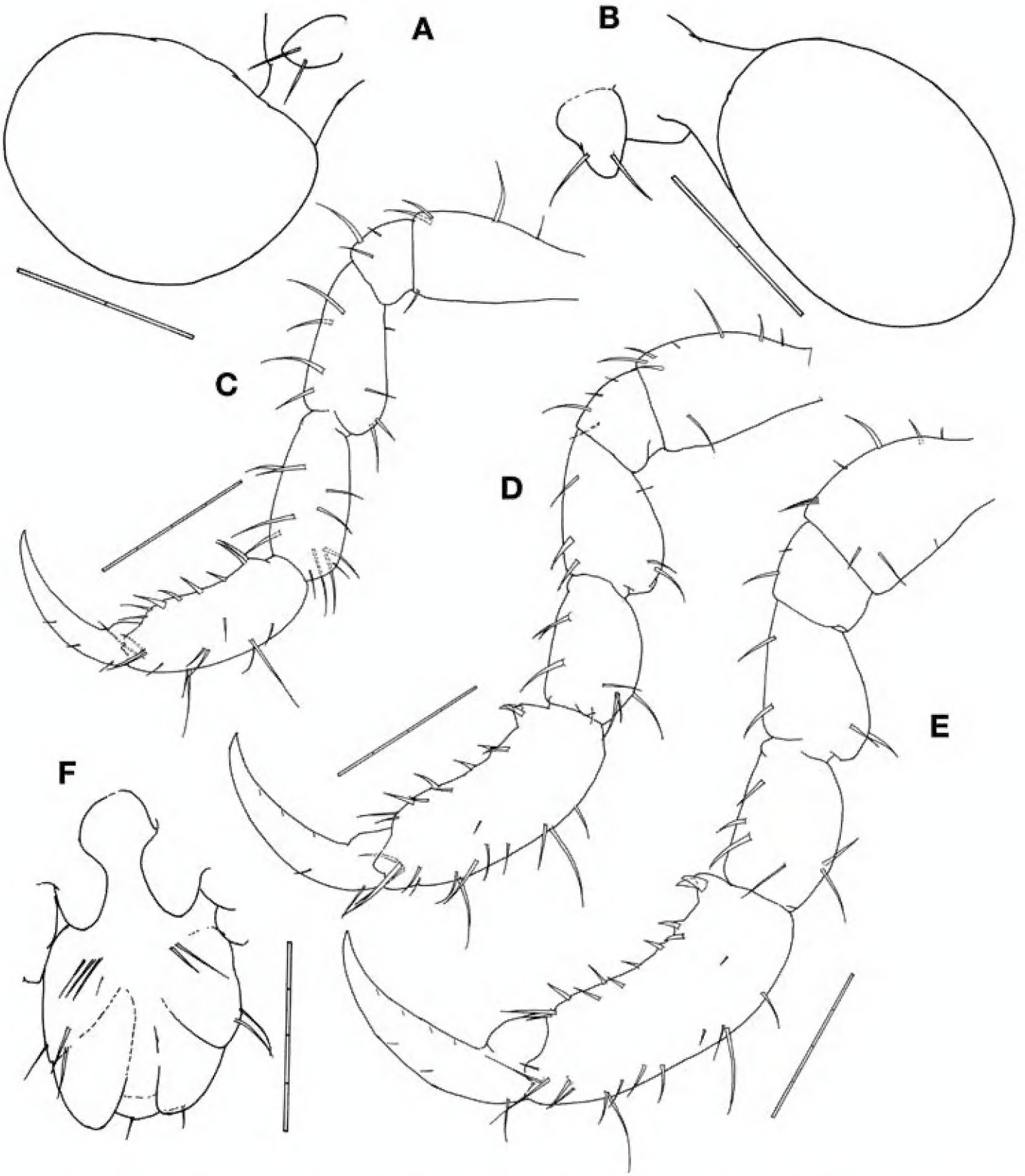

Figure 4. *Pseudaeginella montoucheti* (Quitete, 1971). Male. **A** pereopod 3 and gill 3 **B** pereopod 4 and gill 4 **C** pereopod 5 **D** pereopod 6 **E** pereopod 7 **F** abdomen (ventral view). Scale bars: **A,B**: 0.1 mm. **C–F**: 0.2 mm.

Ubatuba, São Paulo State (23°32'S, 45°10'W – 23°30'S, 45°08'W) (Jacobucci et al. 2002, 2009). Paranaguá Bay, Paraná State (25°31'S, 48 °30'W) (Neves 2006). Tamboretes Archipelago: Pássaros Island (26°22'S, 48°31'W) and Araras Island (26°27'S, 48°34'W), Balneário Barra do Sul and Bombinhas Beach, Bombinhas, Santa Catarina State (present study).

Habitats. Amongst thallii of the brown seaweed *Sargassum* sp. (Quitete 1971a and present paper), *Sargassum cymosum* (Jacobucci et al. 2002) and *Sargassum filipendula*

(Jacobucci et al. 2009); on boat hulls and floating piers (Neves 2006); amongst thallii of the red algae *Amphiroa beauvoisii* and *Spyridia aculeata* and tubular branches of polychaete colony (present paper).

Remarks. Takeuchi (1993) proposed a classification with four families, Caprellidae, Caprogammaridae, Paracercopidae, and Phtisicidae for the Amphipoda Caprellidea (Cyamidae excluded) based on the cladistic analysis. *Fallotritella* and *Pseudaeginella* were set under the Caprellidae. At the same time, Laubitz (1993) proposed a classification with eight families, Caprellidae, Caprellinoididae, Caprogammaridae, Cyamidae, Paracercopidae, Pariambidae, Phtisicidae and Protellidae. In her classification system, *Fallotritella* and *Pseudaeginella* were included in Caprellinoididae which is considered to be more related to Paracercopidae and Phtisicidae than to Caprellidae.

The above treatment of *Fallotritella* and *Pseudaeginella* performed by Takeuchi (1993) was followed by Myers and Lowry (2003) and Vassilenko (2006). In the higher classification system of Myers and Lowry (2003) based on cladistic analysis of corophiid amphipods, Caprellidae, Caprogammaridae and Cyamidae are included among the Caprelloidea. The Caprellidae of Myers and Lowry (2003) is composed of two subfamilies, Caprellinae and Phtisicidae. *Fallotritella* and *Pseudaeginella* with ca. 50 genera constitute the Caprellinae under the Caprellidae (Myers and Lowry 2003). Vassilenko (2006) reviewed the recent studies dealing her support to Takeuchi's (1993) treatment more than to Laubitz (1993) concerning to the phylogeny of the Caprellidea.

The genus *Fallotritella* was established based on *Fallotritella biscaynensis* McCain, 1968 collected from Florida, U.S.A, Antigua & Barbuda and St. Lucia (McCain 1968), just prior to Quitete (1971a). The suggestion of synonymy of these two genus, i.e., *Pseudaeginella* and *Fallotritella* was mentioned under remarks of *Pseudaeginella* by McCain (1968). The lack of reference materials of *Pseudaeginella tristanensis* (Stebbing, 1888), the type species of *Pseudaeginella,* has been led to the presumption towards absence of pereopods 3 and 4 in *Pseudaeginella*. At the same time, *F. biscaynensis* was recorded to possess 1-articulate pereopods 3 and 4 in the generic description for *Fallotritella*. He also noted that, in case of presence of pereopods 3 and 4 in the two known species of *Pseudaeginella, Fallotritella* would fall as junior synonym of *Pseudaeginella* (see McCain 1968, p. 100). Almost 30 years later, Laubitz (1995) examined individuals of *Pseudaeginella tristanensis* collected from Amsterdam Islands in the southern Indian Ocean and reported the synonymy of these two genera based on the presence of minute pereopods 3 and 4 on these specimens.

Pseudaeginella montoucheti (Quitete, 1971) is a tiny caprellidean that measures less than 3.5 mm in body length (see Fig. 1). Within this genus, *P. montoucheti* is the second spiniest species (total of 30 spines on the head and pereonites 1–7 of males) and only surpassed by *P. sanctipauli* that has a total of 33 spines on body surface. In the drawing of *P. montoucheti* from Pernambuco State performed by Quitete (1971a) the following body projections are missing in male: a pair of dorsal projections instead of one dorsal spine medially on pereonite 5 and ventro-lateral projections over the insertion of pereopod 5 and 6 on pereonite 5 and 6, respectively. In spite of the wide distribution, *P. montoucheti* showed a relatively low intraspecific variation in its external morphology.

Although restricted to the Atlantic coast of Brazil, the present study showed that *P. montoucheti* is distributed along more than 2,600 km, from tropical (Itamaracá Island, Pernambuco State, 7°44'S, 34°49'W) to subtropical (municipalities of Barra do Sul, 26°27'S, 48°34'W and Bombinhas, 27°08'S, 48°28'W, Santa Catarina State) latitudes. Recently, *Caprella dilatata* Krøyer, 1843 was also reported showing wide distribution from Sao Paulo State, Brazil (Jacobucci et al. 2002) to Mar del Cobo and Mar del Plata Harbour, Argentina along the south Atlantic coast of South America (Masunari and Takeuchi 2006).

Pseudaeginella Mayer, 1890 is currently composed of 10 species: *P. antiguae* Barnard, 1932 from Antigua and Barbuda, *P. biscaynensis* (McCain, 1968) from Florida, U.S.A., *P. campbellensis* Guerra-García, 2003b from subantarctic islands of New Zealand, *P. colombiensis* Guerra-García, Krapp-Schickel & Müller, 2006 from Colombia, *P. inae* Krapp-Schickel & Guerra-García, 2005 from Indonesia, *P. montoucheti* (Quitete, 1971) from Brazil, *P. polynesica* (Müller, 1990) from Bora Bora and Moorea, French Polynesia, *P. sanctipauli* Laubitz, 1995 from St. Paul and Amsterdam Islands, France, *P. tristanensis* (Stebbing, 1888) from Tristan da Cunha, and *P. vaderi* Guerra-García, 2004 from Australia.

Of 10 species of *Pseudaeginella*, the closest species to *P. montoucheti* can be considered *P. sanctipauli* that was described from St. Paul and Amsterdam Islands, South Indian Ocean (Laubitz 1995), since both are the spiniest species within the genus. On the other hand, *Pseudaeginella montoucheti* can be distinguished from *P. sanctipauli* by the spinier body, antenna 1 length equals half body in males, and presence of ventrolateral spines over gills on pereonites 3 and 4.

A key to the species of *Pseudaeginella* is presented below; it was mainly based on the characteristics of body somites because these can be observed without dissections of mouthparts.

Key to species of the genus *Pseudaeginella*

1a	Antenna 1 longer than half of body length	**2**
1b	Antenna 1 equal or shorter than half of body length	**5**
2a	Basis of gnathopod 2 longer than propodus length	***P. sanctipauli*** **(Fig. 5A)**
2b	Basis of gnathopod 2 shorter than propodus length	**3**
3a	Basis of gnathopod 2 approximately the length of pereonite 2	***P. biscaynensis*** **(Fig. 5B)**
3b	Basis of gnathopod 2 longer than pereonite 2 length	**4**
4a	Pereonites 2, 3, 4 and 5 with lateral projections near the insertion of gnathopod 2, gills and pereopods 5	***P. colombiensis*** **(Fig. 5C)**
4b	Pereonites 2, 3, 4 and 5 without lateral projections	***P. polynesica*** **(Fig. 5D)**
5a	Pereonites with dorsal projections	**6**
5b	Pereonites without any dorsal projections	**8**
6a	Basis of gnathopod 2 provided with a rounded projection proximally	***P. campbellensis*** **(Fig. 5E)**
6b	Basis of gnathopod 2 without any projection	7

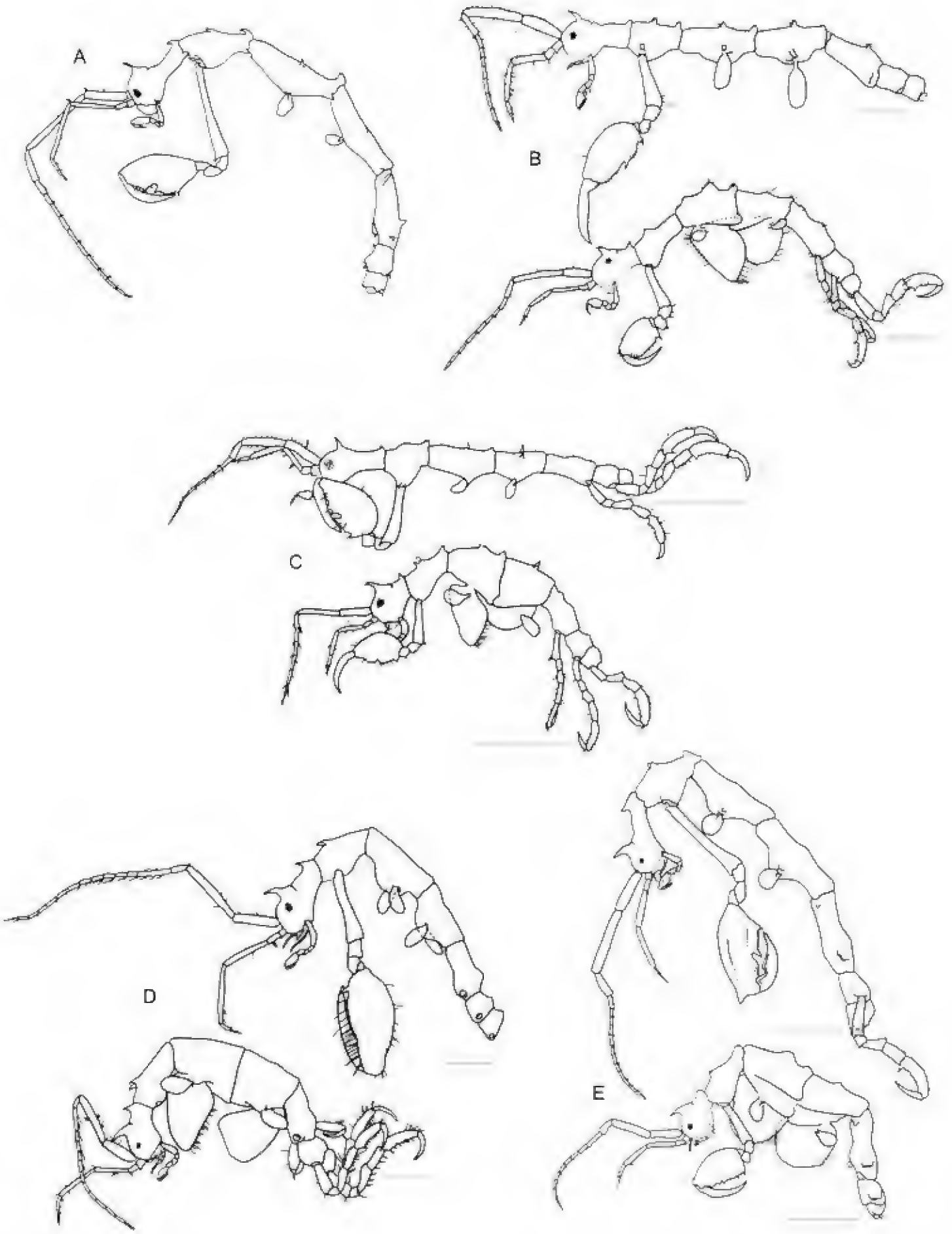

Figure 5. *Pseudaeginella* spp. **A** *Pseudaeginella sanctipauli* Laubitz, 1995 (Redraw from Laubitz 1995) **B** *Pseudaeginella biscaynensis* (McCain, 1968) (Redraw from Guerra-García 2002. Scale bar 0.05 mm) **C** *Pseudaeginella colombiensis* Guerra-García, Krapp-Schickel & Müller, 2006 (Redraw from Guerra-García et al. 2006. Scale bar 1 mm) **D** *Pseudaeginella polynesica* (Müller, 1990. Scale bar 500 μm) (Redraw from Müller 1990) **E** *Pseudaeginella campbellensis* Guerra-García, 2003 (Redraw from Guerra-García 2003. Scale bar 1 mm).

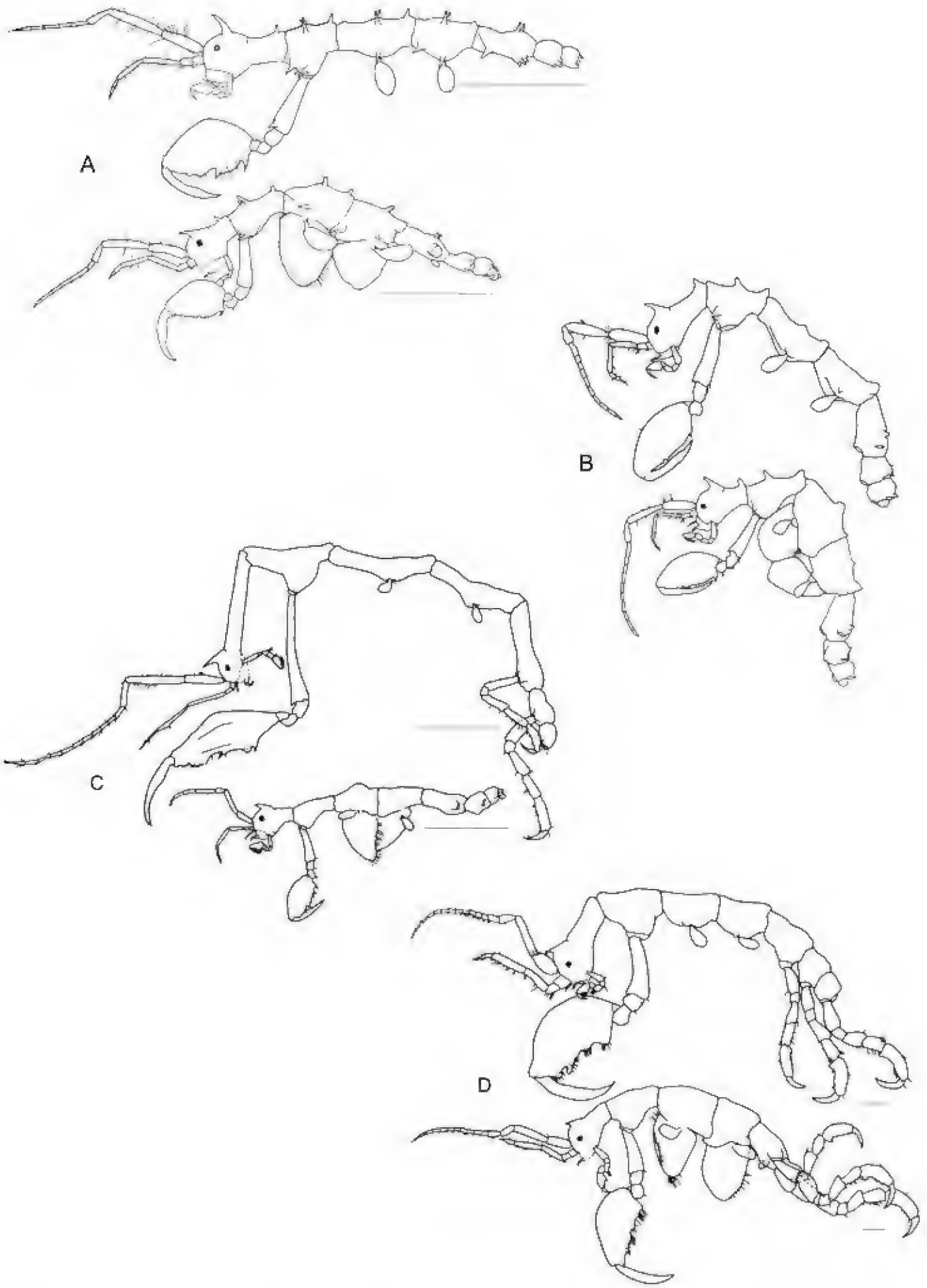

Figure 6. *Pseudaeginella* spp. **A** *Pseudaeginella montoucheti* (Quitete, 1971). Scale bar 1 mm **B** *Pseudaeginella tristanensis* (Stebbing, 1888) (Redraw from Laubitz 1995) **C** *Pseudaeginella vaderi* Guerra-García, 2004 (Redraw from Guerra-García 2004. Scale bar 1 mm) **D** *Pseudaeginella inae* Krapp-Schickel & Guerra-García, 2005 (Redraw from Krapp-Schickel and Guerra-García 2005. Scale bar 1 mm).

7a Pereonites 4 and 5 with a paired antero-lateral projections, body somites with a total of more than 30 projections ..... ***P. montoucheti*** **(Fig. 6A)**

7b Pereonites 4 and 5 without any antero-lateral projections, body somites with a total of less than 30 projections ..... ***P. tristanensis*** **(Fig. 6B)**

8a Basal article of antenna 2 peduncle with a distal projection, well marked suture between head and pereonite 1 ..... ***P. vaderi*** **(Fig. 6C)**

8b Basal article of antenna 2 peduncle without any projection, discrete suture between head and pereonite 1 ..... ***P. inae*** **(Fig. 6D)**

Acknowledgements

We are grateful to Prof. Dr. Danúncia Urban for the critical reading and to Prof. Dr. Luís Amilton Foerster for language revision, both from Federal University of Paraná. All biological sample collecting of the present study complies with the current laws of Paraná State and Brazilian Federal Government, and was conducted with the permission of the Brazilian Institute of Environment and Renewable Natural Resources–IBAMA–of Paraná and Santa Catarina State (Authorization 16247–1 DIFAP/IBAMA, Data 15/08/2008 and Authorization 23180–1 DIFAP/IBAMA, Data 29/04/2010). This is Contribution N°1820 of Department of Zoology, Federal University of Paraná.

References

Arenzon A, Bond-Buckup G (1991) Os Caprellidae do litoral do Rio Grande do Sul (Crustacea: Amphipoda). Comunicações do Museu de Ciências da PUCRS, série Zoologia 4(1): 3–15.

Cunha FLR, Cunha AF, Jacobucci GC (2008) Is the occurrence of caprellid amphipods associated with *Sargassum* (Phaeophyta) influenced by algal and hydrozoan epibiosis? Revista Brasileira de Zoociências 10(3): 259–266.

Díaz YJ, Guerra-García JM, Martín A (2005) Caprellids (Crustacea: Amphipoda: Caprellidae) from shallow waters of the Caribbean coast of Venezuela. Organisms, Diversity & Evolution 5(10): 1–25.

Dubiaski-Silva J, Masunari S (1995) Ecologia populacional dos Amphipoda (Crustacea) dos fitais de Caiobá, Paraná. Revista Brasileira de Zoologia 12(2): 373–396. doi: 10.1590/S0101-81751995000200015

Dubiaski-Silva J, Masunari S (2008) Natural diet of fish and crabs associated with the phytal community of *Sargassum cymosum* C. Agardh, 1820 (Phaeophyta, Fucales) at Ponta das Garoupas, Bombinhas, Santa Catarina State, Brazil. Journal of Natural History 42(27/28): 1907–1922. doi: 10.1080/00222930802126896

Dutra RRG (1988) A fauna vágil do fital *Pterocladia capillacea* (Rhodophyta Gelidiaceae) Ilha do Mel, Paraná, Brasil. Revista Brasileira de Biologia 48 (3): 589–605.

Flynn MN, Valério-Berardo MT (2009) Depth-associated patterns in the development of Amphipoda (Crustacea) assemblages on artificial substrata in the São Sebastião Channel, Southeastern Brazil. Nauplius 17(2): 127–134.

Guerra-García JM (2001) The Caprellidea (Crustacea: Amphipoda) collected by the expedition of "Grigore Antipa" National Museum of Natural History from Tanzania, with the description of a new genus and two new species. Travaux du Muséum National d'Histoire Naturelle "Grigore Antipa" 43: 23–45.

Guerra-García JM (2002) Redescription of five rare caprellids (Crustacea: Amphipoda) collected from Tanzanian coasts. Helgoland Marine Research 55: 221–231.

Guerra-García JM (2003a) Two new species of deep-water caprellids (Crustacea Amphipoda) from northeastern Brazil. Cahiers de Biologie Marine 44: 171–184.

Guerra-García JM (2003b) The caprellidean Amphipoda from the subantarctic islands of New Zealand and Australia with the description of a new genus and two new species. Scientia Marina 67(2): 177–194.

Guerra-García JM (2004) The Caprellidea (Crustacea, Amphipoda) from Western Australia and Northern territory, Australia. Hydrobiologia 522: 1–74. doi: 10.1023/B:HYDR.0000029929.07691.a7

Guerra-García JM (2006) Caprellidae (Crustacea: Amphipoda) from the Great Barrier Reef and Adjacent Localities. Records of the Australian Museum 58: 417–458. doi: 10.3853/j.0067-1975.58.2006.1451

Guerra-García JM, Takeuchi I (2002) The Caprellidea (Crustacea: Amphipoda) from Ceuta, North Africa, with the description of three species of *Caprella*, a key to the species of *Caprella*, and biogeographical discussion. Journal of Natural History 36: 675–713. doi: 10.1080/00222930010025923

Guerra-García JM, Takeuchi I (2003) The Caprellidea (Malacostraca: Amphipoda) from Mirs Bay, Hong Kong, with the description of a new genus and two new species. Journal of Crustacean Biology 23(1): 154–168. doi: 10.1651/0278-0372(2003)023[0154:TCMAFM]2.0.CO;2

Guerra-García JM, Krapp-Schickel T, Müller HG (2006) Caprellids from the Caribbean Coast of Colombia, with description of three new species and a key for species identification. Boletín de Investigaciones Marinas y Costeras 35: 149–194.

Jacobi CM (1987) Spatial and temporal distribution of Amphipoda associated with mussel beds from the Bay of Santos, Brazil. Marine Ecology Progress Series 35: 51–58.

Jacobucci GB, Moretti D, Silva EM, Leite FPP (2002) Caprellid amphipods on *Sargassum cymosum* (Phaeophyta): depth distribution and population biology. Nauplius 10(1): 27–36. doi: 10.3354/meps035051

Jacobucci GB, Güth AZ, Turra A, Magalhães CA, Denadai MR, Chaves AMR, Souza ECF (2006) Levantamento de Mollusca, Crustacea e Echinodermata associados a *Sargassum* spp. Na Ilha da Queimada Pequena, Estação Ecológica dos Tupiniquins, litoral sul do Estado de São Paulo, Brasil. Biota Neotropica 6(2): 1–8.

Jacobucci GB, Tanaka MO, Leite FPP (2009) Temporal variation of amphipod assemblages associated with *Sargassum filipendula* (Phaeophyta) and its epiphytes in a subtropical shore. Aquatic Ecology 43: 1031–1040. doi: 10.1007/s10452-009-9230-2

Krapp-Schickel T, Guerra-García JM (2005) Littoral Caprellidae (Crustacea: Amphipoda) from Indonesia, with the description of a new species. Bollettino del Museo Civico di Storia Naturale di Verona 29: 47–62.

Laubitz DR (1993) Caprellidea (Crustacea: Amphipoda): towards a new synthesis. Journal of Natural History 27: 965–976. doi: 10.1080/00222939300770591

Laubitz DR (1995) Caprellidea (Crustacea: Amphipoda) from the Southern and Western Indian Ocean. Mésogée 54: 81–100.

Leite FPP, Tanaka MO, Sudatti DB, Gebara RS (2007) Diel density variation of amphipods associated with *Sargassum* beds from two shores of Ubatuba, southeastern, Brazil. Iheringia, Série Zoologia 97(4): 400–405.

Masunari S (1982) Organismos do fital de *Amphiroa beauvoisii*. I. Autoecologia. Boletim de Zoologia USP 7: 57–148.

Masunari S, Takeuchi I (2006) Redescription of *Caprella dilatata* Krøyer, 1843 (Caprellidae: Amphipoda: Crustacea) from Brazil, with note on its biogeographical distribution in South America. Zootaxa 1298: 49–60.

McCain JC (1965) The Caprellidae (Crustacea: Amphipoda) of Virginia. Chesapeake Science 6(3): 190–196.

McCain JC (1968) The Caprellidae (Crustacea: Amphipoda) of the Western North Atlantic. United States. Bulletin of the United States National Museum 278(I/IV): 1–145. doi: 10.2307/1350852

Mittmann J, Müller YMR (1998) Contribuição ao conhecimento da biologia de *Caprella penantis* (Leach) (Crustacea, Amphipoda) da Ilha de Anhatomirim, Santa Catarina. Revista Brasileira de Zoologia 15(1): 95–100.

Myers AA, Lowry JK (2003) A phylogeny and a new classification of the Corophiidea Leach, 1814 (Amphipoda). Journal of Crustacean Biology 23(2): 443–485. doi: 10.1651/0278-0372(2003)023[0443:APAANC]2.0.CO;2

Müller HG (1990) New species and records of coral reef inhabiting Caprellidae from Bora Bora and Moorea, Societ Islands (Crustacea: Amphipoda). Revue Suisse de Zoologie 97(4): 827–842.

Neves CS (2006) Bioinvasão mediada por embarcações de recreio na Baía de Paranaguá, PR e suas implicações para a conservação. Master Thesis, Federal University of Paraná, Curitiba.

Quitete JMPA (1971a) *Fallotritella montoucheti* nova espécie de Caprellidae da costa brasileira (Crustacea: Amphipoda). Atas da Sociedade de Biologia do Rio de Janeiro 14 (5/6): 189–192.

Quitete JMPA (1971b) *Paracaprella digitimanus*, nova espécie de Caprellidae da costa brasileira (Crustacea: Amphipoda). Atas da Sociedade de Biologia do Rio de Janeiro 14: 189–192.

Quitete JMPA (1972) *Hemiaegina costai*, nova espécie de Caprellidae da costa brasileira (Crustacea: Amphipoda). Atas da Sociedade de Biologia do Rio de Janeiro 15: 165–168.

Quitete JMPA (1975) *Orthoprotella melloi*, nova espécie de Caprellidae (Crustacea: Amphipoda) da costa brasileira. Avulso do Departamento de Zoologia do Instituto de Biologia da Universidade do Rio de Janeiro 24: 1–9.

Quitete JMPA (1979) *Phtisica verae*, nova espécie de Caprellidae (Crustacea: Amphipoda) da costa brasileira. Avulso do Departamento de Zoologia do Instituto de Biologia da Universidade do Rio de Janeiro 31: 1–7

Rayol MC, Serejo CS (2003) A new species of *Monoliropus* Mayer, 1903 (Amphipoda, Caprellidea) from Guanabara Bay, RJ, Brazil. Arquivos do Museu Nacional 61(3): 165–170.

Serejo CS (1997) *Hemiaegina costai* Quitete, 1972 a synonym of *Hemiaegina minuta* Mayer, 1890 (Amphipoda, Caprellidea). Crustaceana 70: 630–632. doi: 10.1163/156854097X00726

Serejo CS (1998) Gammaridean and caprellidean fauna (Crustacea) associated with the sponge *Dysidea fragilis* Johnston at Arraial do Cabo, Rio de Janeiro, Brazil. Bulletin of Marine Science 63(2): 63–85.

Takeuchi I (1993) Is the Caprellidea a monophyletic group ? Journal of Natural History 27: 947–964. doi: 10.1080/00222939300770581

Thiel M, Guerra-García JM, Lancelotti DA, Vasquez N (2003) The distribution of littoral caprellids (Crustacea: Amphipoda: Caprellidea) along the Pacific coast of continental Chile. Revista Chilena de Historia Natural 76: 297–312. doi: 10.4067/S0716-078X2003000200014

Vassilenko SV (2006) Caprellids. In: Kasyanov VL (Ed) Biota of the Russian Waters of the Sea of Japan 4, 200 pp. [In Russian and in English]

Wakabara Y, Tararam AS, Valério-Berardo MT, Duleba W, Leite FPP (1991) Gammaridean and caprellidean fauna from Brazil. Hydrobiologia 223: 69–77. doi: 10.1007/BF00047629

Wakabara Y, Serejo CS (1998) Malacostraca - Peracarida. Amphipoda. Gammaridea and Caprellidea. In: Young PS (Ed) Catalogue of Crustacea of Brazil. Museu Nacional 6: 561–594.

Winfield I, Escobar-Briones E, Morrone JJ (2006) Updated checklist and identification of areas of endemism of benthic amphipods (Caprellidea and Gammaridea) from offshore habitats in the SW Gulf of Mexico. Scientia Marina 70(1): 99–108.